

## CLAIMS:

1. A catheter introducer, including
  - A catheter having a catheter hub and an axial through channel with a proximal end portion made as a female luer lock portion,
  - A needle assembly comprising
    - a needle with a distal sharp point, which extends through said catheter channel,
    - a safety means having a protector for protecting said needle distal sharp point after introducing said catheter into a blood vessel,
  - And a catheter cap for occluding a proximal opening of said catheter after the transposition of said needle to a protected position, therewith said catheter cap is detachably positioned on said needle assembly so that, after said needle protection, said catheter cap is accessible for occluding said catheter proximal opening without previous detachment of said catheter cap from said needle assembly.
2. The catheter introducer of claim 1, wherein there is a mounting means for mounting said catheter cap on said needle assembly and their detaching, and said mounting means has first and second mounting elements one of which is disposed on said needle assembly and the other on said catheter cap.
3. The catheter introducer of claim 1, wherein said catheter cap and the detail of said needle assembly on which it is positioned are made as a single part, so that said catheter cap is connected to said needle assembly with a fragile link to be easy broken after mounting said catheter cap onto said catheter.
4. The catheter introducer of claim 1, wherein said catheter cap has a sealing surface, which provides the sealing contact with said catheter upon mounting said catheter cap onto said catheter.
5. The catheter introducer of claim 4, wherein there is a shielding means preventing said sealing surface of catheter cap from accidental contact with the operator before mounting said catheter cap onto said catheter.

6. The catheter introducer of claim 5, wherein said shielding means is made as a shielding wall enclosing said sealing surface and protruding beyond its open edge.
7. The catheter introducer of claim 4, wherein said catheter cap has a tapered male luer member and said sealing surface is the conical surface of said tapered male luer member.
8. The catheter introducer of claim 7, wherein said tapered male luer member of said catheter cap disposed on said needle assembly is directed outwardly.
9. The catheter introducer of claim 4, wherein there is a stabilizing means ruling out the rotation of said sealing surface with respect to said needle assembly during mounting said catheter cap onto said catheter.
10. The catheter introducer of claim 2, 9, wherein said stabilizing means is made as at least one slot and at least one projection, one of which is located on said first mounting element and the other on said second mounting element so that said projection slidably enters said slot.
11. The catheter introducer of claim 2, 9, wherein said stabilizing means is made as a thread disposed on said first and second mounting elements.
12. The catheter introducer of claim 2, 9, wherein said stabilizing means is made in the form of interacting a female conical portion and a male conical element, one of which is disposed on said first mounting element and the other on said second mounting element.
13. The catheter introducer of claim 2, wherein said catheter cap is detachably retained on said needle assembly only by the friction forces between said first and second mounting elements.
14. The catheter introducer of claim 1, wherein, after protecting said needle distal sharp point with said safety means, said needle assembly has a proximal end and a distal end, and said catheter cap is positioned at one of said needle assembly ends.

15. The catheter introducer of claim 14, wherein said catheter cap is disposed on said protector.
16. The catheter introducer of claim 14, wherein said catheter cap is disposed on a hub of said needle.
17. The catheter introducer of claim 14, wherein said catheter cap is positioned at said proximal end of needle assembly.
18. The catheter introducer of claims 8, 17, wherein said tapered male luer member of catheter cap initially is directed proximally.
19. The catheter introducer of claim 14, wherein said catheter cap is positioned at said distal end of needle assembly.
20. The catheter introducer of claims 8, 19, wherein said tapered male luer member of catheter cap is directed distally.
21. The catheter introducer of claim 8, wherein said catheter cap is positioned at the middle part of said needle assembly and said tapered male luer member of catheter cap is directed laterally.
22. The catheter introducer of claim 1, wherein said catheter cap is provided with a thread for fixing said catheter cap on said catheter.
23. The catheter introducer of claims 4, 22, wherein said thread is disposed on an inner surface of an external wall of said catheter cap and said external wall is rotatable relative to said catheter cap sealing surface, thereby facilitating the fixation of said catheter cap on said catheter.
24. The catheter introducer of claim 1, wherein said safety means is designed for displacing said needle along its axis into a needle protected position.

25. The catheter introducer of claim 24, wherein said needle displacing into needle protected position is performed with a springy retracting element.
26. The catheter introducer of claim 24, wherein said needle displacing into needle protected position is performed by means of manual drive.
27. The catheter introducer of claims 16, 17, 26, wherein said needle hub is movable in a guide of the catheter introducer so that, in a duty ready position, the proximal end of said needle hub is located distally of the proximal end of said guide and said catheter cap is detachably positioned at said guide proximal end, and, in said needle retracted position, said needle hub proximal end is located proximally of said guide proximal end and said catheter cap is detachably positioned at said needle hub proximal end as a result of disengaging said catheter cap from said guide and engaging it with said needle hub during the transposition of said needle hub from said duty ready position into said needle protected position.
28. The catheter introducer of claim 25, wherein said protector of safety means is made in the form of a barrel containing said needle in said needle protected position and having a stop means located at a proximal end of said barrel and restricting the proximally directed displacement of said needle; there is a latch of said springy retracting element and said latch is displaced upwards, out of said barrel interior by a trigger to actuate said safety means; and said barrel, latch and trigger are made as a single part.
29. The catheter introducer of claim 28, wherein said stop means is made in the form of a flexible ribbon, which also fulfils a role of an impact damper.
30. The catheter introducer of claim 28, wherein said stop means is made in the form of a protrusion projecting inward said barrel, disposed on a resilient leg declined inward said barrel at a small angle to said barrel axis and fulfilling a role of an impact damper, which takes up the movement energy of a retracted needle unit by means of the friction between said resilient leg and said needle unit, therewith said barrel, resilient leg and protrusion of stop means in are made as a single part.
31. A catheter introducer, comprising

- A catheter with a through axial channel,
  - A needle assembly having
    - a needle unit including a needle with a distal sharp point extending through said catheter axial channel and a needle hub with a flash chamber,
    - a safety means having: a protector in the form of a barrel for protecting said needle distal sharp point after introducing said catheter into a blood vessel, a spring, a trigger, a latch, a stop element located at a proximal end of said barrel; therewith said barrel, trigger, and latch are made as a single part, and said latch is displaced upwards, out of said barrel interior by said trigger to actuate said safety means.
32. The catheter introducer of claim 31, wherein there is a damper of impact for cushioning against the impact of said needle hub and stop element during retracting said needle into its protected position.
33. The catheter introducer of claim 32, wherein said stop element and damper of impact are made as a single element.
34. The catheter introducer of claim 33, wherein said stop element and damper of impact are made in the form of a flexible ribbon located on the open proximal face of said barrel.
35. The catheter introducer of claim 33, wherein said stop element and damper of impact are made in the form of a resilient leg declined inward said barrel at a small angle to said barrel axis and cushioning against the impact by means of a friction between said resilient leg and needle unit, and the proximal end of said resilient leg is provided with a protrusion projecting inward said barrel and designed for complete stopping said retracted needle unit, therewith said barrel, resilient leg and its protrusion are made as a single part.
36. The catheter introducer of claim 31, wherein said trigger and latch are connected to said barrel with a flexible link providing the mobility of said trigger and latch relative to said barrel.

37. The catheter introducer of claim 36, wherein said latch protrudes inside said barrel in the duty ready position, is provided with a sloping surface faced proximally which along with said flexible link is designed to facilitate the introducing said needle unit into said barrel during their putting together.
38. The catheter introducer of claim 31, wherein a proximal end portion of said through axial channel located in said catheter hub is made as a female luer lock portion, there is a catheter cap for occluding a proximal opening of said catheter axial channel, and said catheter cap is detachably positioned on said needle assembly so that, following the protection of said needle, said catheter cap is accessible for occluding said proximal opening of catheter axial channel without previous detachment of said catheter cap from said needle assembly.
39. The catheter introducer of claim 38, wherein there is a mounting means for mounting said catheter cap on said needle assembly and their detaching, said mounting means has first and second mounting elements one of which is disposed on said needle assembly and the other on said catheter cap, and said mounting elements rule out the rotation of said catheter cap with respect to said needle assembly during mounting said catheter cap on said catheter.
40. The catheter introducer of claim 38, wherein said catheter cap is positioned at the proximal end of said barrel.
41. The catheter introducer of claim 38, wherein said catheter cap is positioned at the distal end of said barrel.
42. A catheter introducer, comprising
- A catheter with a trough axial channel,
  - A needle assembly having
    - a needle unit including a needle with a distal sharp point extending through said catheter axial channel and a needle hub with a flash chamber,
    - a safety means for transposing said needle along its axis into a needle protected position by a springy retracting element, having: a protector in the form of a barrel containing

said needle in said needle protected position, a trigger, a latch, a stop element and a damper of impact, therewith said stop element and said damper of impact are made as a single member located at a proximal end of said barrel.

43. The catheter introducer of claim 42, wherein said barrel, trigger, and latch are made as a single part so that said trigger and latch are connected to said barrel by a flexible link and therefore said trigger and latch are movable relative to said barrel; and said latch is initially protruded inward said barrel, provided with a sloping surface faced proximally to facilitate assembling said barrel and needle unit, and displaced upwards, out of said barrel interior by said trigger to actuate said safety means.

44. The catheter introducer of claim 42, wherein said stop element and damper of impact are made in the form of a flexible ribbon located on the open proximal face of said barrel.

45. The catheter introducer of claim 42, wherein said stop element and damper of impact are made in the form of a resilient leg declined inward said barrel at a small angle to said barrel axis and cushioning against the impact by means of a friction between said resilient leg and needle unit, and the proximal end of said resilient leg is provided with a protrusion projecting inward said barrel and designed for complete stopping said retracted needle unit, therewith said barrel, resilient member and its protrusion are made as a single part.

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